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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/615,628	07/09/2003	Peng-Fu Hsu	TSM02-1205	1467
43859	7590	07/14/2005	EXAMINER	
SLATER & MATSIL, L.L.P. 17950 PRESTON ROAD, SUITE 1000 DALLAS, TX 75252			MULLIS, JEFFREY C	
			ART UNIT	PAPER NUMBER

1711

DATE MAILED: 07/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/615,628

Applicant(s)

HSU ET AL.

Examiner

Jeffrey C. Mullis

Art Unit

1711

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-9, 11, 12 and 14 is/are rejected.
- 7) ☒ Claim(s) 4 and 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7-9-03</u> . | 6) <input type="checkbox"/> Other: _____  |

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Applicant's election of Group of claims 1-12 and 14 as well as thionyl chloride halogenating agent, ethylene alkylation agent and trimethylchlorosilane terminating agent in the reply filed on 4-21-05 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

While the term "in situ" has meaning in the context of biological systems it is not clear what "in situ" might embrace otherwise. Note Grant and Hackh's Chemical Dictionary which recites this term as meaning "in the normal or natural place or position" and as it is subjective as to what is "normal" or "natural" it is unclear what applicants' intend. Furthermore the instant specification at paragraph 26 that the process of silicaon carbon bond breaking does not even occur during the process of claim 1 but in fact occurs prior to the process which appears to be contradictory to claim 5.

Claims 2 and 8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicants have not disclosed how to make Cl3 (sic), a structure for which no electron dot structure can be drawn based on art recognized rules.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 5 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Terry et al., Journal of Applied Physics, vol 85,no.1, cited by applicants.

Terry et al. disclose a process in which a silicon dioxide film is formed on a silicon surface for use in semiconductors , following which halogenation and alkylation by use of alky lithium and termination by water and acid takes place. Note the "II.

EXPERIMENT" section starting on page 213 and the first sentence of the article. Note Figure one on page 215 which indicates the presence of silicon dioxide even after alkylation. While the term "silicate" does not appear in the reference, silicon dioxide surfaces are known to contain pendant hydroxyl groups and any amount of ionized hydroxyl would meet the limitation of "silicate" even assuming applicants' preamble limitation should be given any weight. See the section "Thermal Annealing" for the breaking of SiC bonds thermally.

Claims 3, 6, 7-9, 11 and 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Terry et al, cited above in view of applicants admission at paragraph 3 and Weidman or Herzig et al. (US patents 4,921,321 or 5,468,890, both relied upon solely for claims 3 and 8).

The use of grignard as alkylating agent is not disclosed by the primary reference, nor is the process of formation of a resist mask disclosed or etching or removing said mask. Applicants admit in paragraph 3 of their specification that it is known in the semiconductor art to form a resist layer on the surface of a dielectric and etch and remove it.

Wideman and Herzig et al. at the paragraph bridging columns 2 and 3 and column 7, lines 17-32 respectively disclose the equivalence of alkyl lithium and grignard as alkylating agents for halosilanes.

It would have been obvious to a practitioner having an ordinary skill in the art to form a resist mask on the dielectric layer of the primary reference, etch and remove it since applicants admit that these are known processes for forming a semi conducting device and motivated by the disclosure of the primary reference of the desirability of producing semi conducting devices absent any showing of surprising or unexpected results.

With re to the use of grignard in the process of the primary reference, such usage would have been obvious to a practitioner having an ordinary skill in the art at the time oof the invention in the expectation that grignard would work as well as alkyl lithium as taught by patentees, absent any showing of surprising or unexpected results.

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Claims 4 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication should be directed to Jeffrey C. Mullis at telephone number 571 272 1075.

Jeffrey C. Mullis  
J Mullis  
Art Unit 1711

JCM

7-7-05

Jeffrey Mullis  
Primary Examiner  
Art Unit 1711

A handwritten signature in black ink, appearing to be 'JCM', written over the printed name and title of the examiner.